REMARKS

I. Status of the Application

At the time of the Action, Claims 29-49 were pending. The specification was objected to for illegibility of certain of the numbers in Tables 1 and 2 on pages 14 and 16. Applicant submits herewith substitute pages 14 and 16 that show clearly all numbers included therein. The Action objected to the drawings for the failure to show piston (17) in Figure 2 as stated in the specification; the specification has been amended above to address this issue. Claims 29-37, 39, 41 and 44 were objected to for the use of the term "characterized by", which has been replaced with "wherein."

Claims 29, 32, 34, 37, 44 and 48 stand rejected under Section 112, second paragraph. Claims 29, 32, 34, 35, 37, 40, 45 and 46 stand rejected under Section 102(b). Claims 30, 31, 36, 38, 39, 41-44, 47 and 49 stand rejected under Section 103(a). These rejections are addressed hereinbelow.

II. The Section 112 Rejections

The Action states that Claim 29 is confusing in that it is unclear whether the term "suspension mounting" recited in line 3 and in lines 5-6 is the same element. Applicant submits that this is the same element in both instances. Also, Claim 29 is rejected as confusing as to whether the "wheels" or the "pig" rotate. Claim 29 has been amended to clarify that it is the "pig" that rotates.

Terms in Claims 32, 34, 37 and 44 are deemed to lack antecedent basis. These claims have been amended above to provide the requisite antecedent basis for the terms identified in the Action.

The Action also inquires about the "internally mounted" status of the "biasing means" in Claim 34. This claim has been amended to clarify that the piston assembly is internally mounted within the housing recited in Claim 32.

Finally, the Action rejects Claim 48 for its recitation of a "use" of the pipeline pig of Claim 29. Claim 48 has been amended to address this issue.

In view of the foregoing, Applicants respectfully submit that the rejections under Section 112 have been overcome, and respectfully request that they be withdrawn.

III. The Section 102(b) and Section 103(a) Rejections

The Action rejects Claims 29, 32, 34, 35, 37, 40, 45 and 46 as anticipated by U.S. Patent No. 2,887,118 to Loeffler (Loeffler). The Action characterizes Loeffler as disclosing:

> a pipe cleaning device comprising a plurality of wheels and links, wherein the links are mounted around a piston, which is mounted to the pump having a shaft. The links are joined to a slidable sleeve and maintain the wheels in their outwardly extended position. . . . As shown in figure[s] 1 and 2 the links are offset from the axis of the pump shaft. Loeffler further teaches the device may comprise a bowl-shaped cleaning head.

Based on these characterizations, the Action concludes that Loeffler anticipates the listed claims under Section 102(b).

In response, Applicants note that Claim 29 is directed to an apparatus (i.e., a pipeline "pig") that travels through length of a pipeline driven by a flowing product. A suspension system in the pig maintains the pig in a generally central position in the pipeline shaft. The pig moves in the pipeline shaft by virtue of the pressure of the fluid in the pipeline on a portion of the pig, such as a guide or sealing disc. In some devices of this type, the sealing or guide discs can wear unevenly, particularly if the pipeline is not perfectly round.

The apparatus recited in Claim 29 can overcome the problem of uneven wear by causing the pig to rotate as it is urged along the pipeline. This rotation is induced by the suspension arms of the wheel assembly of the pig being offset from the axis of the pig shaft. Claim 29 includes this feature with the recitation "the suspension arms of the wheel assembly are offset from the axis of the pig shaft to thereby enable the pig to rotate as it travels down a pipe."

Loeffler fails to disclose this element of Claim 29. Instead, the Loeffler device has suspension arms of its wheel assemblies that are aligned with the axis of the shaft **48**.

Nowhere does Loeffler suggest any offsetting of the suspension arms, and in no manner does Loeffler disclose any rotation of its device as it travels down the pipe. As such, Loeffler fails to disclose at least this element of Claim 29, and cannot, therefore, anticipate Claim 20 or any claims depending therefrom. Acordingly, Applicants respectfully request that the rejections under Section 102(b) be withdrawn.

The Action also states that Claims 30, 31, 36, 38, 39, 41-44, 47 and 49 (each of which depends directly or cognately from Claim 29) are unpatentable under Section 103(a) based on Loeffler alone or in view of "applicants' prior art admission." However, as discussed above, Loeffler fails to disclose the offset suspension arms recited in Claim 29, and nothing in Loeffler suggests modifying the device shown therein to include suspension arms that meet the recitations of Claim 29. Moreover, nowhere does Loeffler address the problem that can be solved with offset suspension arms (uneven wear of the device during use) or the solution presented by the present invention. As such, Applicants submit that it would not have been obvious to the ordinarily skilled artisan to conceive the recited subject matter based on the disclosure of Loeffler. Consequently, Applicants respectfully request that the rejections under Section 103(a) be withdrawn.

IV. Conclusion

Inasmuch as all of the issues raised in the Action have been addressed, Applicants submit that the present application is in condition for allowance and the same is earnestly solicited. The Examiner is invited to telephone the undersigned at 919-854-1400 for resolution of any outstanding issues.

Respectfully submitted,

James R. Cannon
Registration No. 35,839

Myers Bigel Sibley & Sajovec, P.A.
P. O. Box 37428
Raleigh, North Carolina 27627
Telephone: (919) 854-1400
Facsimile: (919) 854-1401
Customer No. 20792

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Joyce Paoli

Table 1

Suspension geometry and force calculations for a typical 28 inch to 42 inch (71.12cm tb 106.68cm) system

Position	y	q	f	k	Dia over Wheels	x (mm)		W (N)				
	a	8.7175					l N/mm	40	50	60	50	50
							p mm	33.2	26.6	22.2	27.5	40.0
1	47.0182	38.3007	58.5278	0.7559		-5.00	# ####	6832	6529	6227	6803	10583
2	45.0000	36.2825	57.1409	0.7051	1016mm(42")	0.00		7500	7500	7500	7756	11281
3	37.2031	28.4856	51.9249	0.5440		17.76		8878	9651	10424	9848	12568
4	30.0709	21.3534	47.3345	0.4304		31.80		8959	10054	11149	10210	12362
5	23.4220	14.7045	43.2047	0.3432		42.97		8371	9551	10731	9675	11392
6	17.0933	8.3758	39.4099	0.2718		51.86		7401	8529	9656	8627	9986
7	10.9736	2.2561	35.8724	0.1706		58.83		5025	5828	6631	5890	6743
8	4.9787	-3.7388	32.5403	0.1555	668mm (28")	64.12		4843	5641	6438	5697	6474
9	1.9034	-6.8141	30.8851	0.1289		66.25		4103	4786	5469	4832	5477
10	-1.1669	-9.8844	29.2709	0.1031		67.99		3341	3902	4463	3939	4455

Position	y	q	f	k	Dia over Wheels	x (mm)	0 0	W (N)	F (N)	R (N)	Qv (N)	Q (N)
	a	8.7175					l N/mm	50	50	50	50	50
							p mm	27.5	27.5	27.5	27.5	27.5
1	47.0182	38.3007	58.5278	0.7559	0.000	-5.00		6803	9000	17239	7899	11975
2	45.0000	36.2825	57.1409	0.7051	1016mm(42")	0.00		7756	11000	20274	9274	14388
3	37.2031	28.4856	51.9249	0.5440	0.000	17.76		9848	18104	29357	13261	22441
4	30.0709	21.3534	47.3345	0.4304	0.000	31.80		10210	23720	35000	15526	28350
5	23.4220	14.7045	43.2047	0.3432	0.000	42.97		9675	28188	38671	16799	32814
6	17.0933	8.3758	39.4099	0.2718	0.000	51.86		8627	31744	41086	17457	36227
7	10.9736	2.2561	35.8724	0.1706	0.000	58.83		5890	34532	42615	19082	39453
8	4.9787	-3.7388	32.5403	0.1555	668mm (28")	64.12		5697	36648	43473	17687	40693
9	1.9034	-6.8141	30.8851	0.1289	0.000	66.25		4832	37500	43696	17598	41424
10	-1.1669	-9.8844	29.2709	0.1031	0.000	67.99		3939	38196	43787	17470	42001

Table 2

k for varying suspension positions on a typical 10 inch to 16 inch (25.4cm to 40.64cm) system

Position	y	q	f	k	Dia over Wheels	x (mm)		W (N)				
	a	0					l N/mm	35	70	60	50	50
							p mm	20.0	20.0	2.4	27.5	40
1	43.9900	43.9900	65.3800	1.0989		0.00		769	1538	1266	12088	17582
2	38.4400	38.4400	59.4100	0.8677	(16")	8.08		853	1706	4365	12349	16687
3	33.2900	33.2900	54.3400	0.7158		14.62		867	1735	5848	12060	15639
4	28.4300	28.4300	49.8400	0.6027		20.07		845	1691	6501	11469	14482
5	23.7800	23.7800	45.7200	0.5118		24.68		800	1601	6653	10683	13242
6	19.3000	19.3000	41.8800	0.4353		28.6		740	1481	6477	9768	11944
7	14.9300	14.9300	38.2700	0.3685		31.93		670	1340	6073	8760	10603
8	10.6500	10.6500	34.8200	0.3085		34.74		591	1182	5499	7680	9222
9	6.4200	6.4200	31.5100	0.2533	(10")	37.07		506	1012	4799	6542	7809
10	2.2400	2.2400	28.3200	0.2018		38.96		416	833	4006	5365	6374

Position	y	q	f	k	Dia over Wheels	x (mm)	0 0	W (N)	F (N)	R (N)	Qv (N)	Q (N)
	a	0					l N/mm	70	70	70	70	70
							p mm	20.0	20.0	20.0	20.0	20.0
1	43.9900	43.9900	65.3800	1.0989		0.00		1538	1400	3361	1517	2064
2	38.4400	38.4400	59.4100	0.8677	(16")	8.08		1706	1966	3863	1619	2547
3	33.2900	33.2900	54.3400	0.7158		14.62		1735	2423	4157	3355	2928
4	28.4300	28.4300	49.8400	0.6027		20.07		1691	2805	4349	1633	3246
5	23.7800	23.7800	45.7200	0.5118		24.68		1601	3128	4480	1606	3516
6	19.3000	19.3000	41.8800	0.4353		28.6		1481	3402	4569	1569	3747
7	14.9300	14.9300	38.2700	0.3685		31.93		1340	3635	4630	1528	3943
8	10.6500	10.6500	34.8200	0.3085		34.74		1182	3832	4668	1483	4109
9	6.4200	6.4200	31.5100	0.2533	(10")	37.07		1012	3995	4686	1437	4246
10	2.2400	2.2400	28.3200	0.2018		38.96		833	4127	4688	1391	4355